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stories of the strength and voracity of the "killers," popularly current among seafaring men, seem now hardly exaggerations of the truth. Though apparently only rarely attacking the larger cetaceans, they prey with great rapacity upon their young and the smaller species, as well as also upon seals and the larger fishes. Even the powerful old male sealions and the full grown walruses, are said to endeavor to avoid them, while their ability to kill the largest of the baleen whales seems fully established. The species of "killer" chiefly referred to in this article appear to be the *Orca ater* and *O. rectipinna* of Cope, though possibly a third species is figured. The same enterprising magazine has at former times furnished us with other articles of value from Capt. Scammon's ready pen, respecting other marine mammals of the Pacific Coast, among them valuable papers on the Sea Otter ("Overland Monthly," Vol. iv, Jan., 1870, pp. 25-30), and the sealions and seabears (*Ibid.*, Vol. viii, Mar., 1872, pp. 266-23). We are glad to learn from Captain Scammon (incidentally in a letter to the writer) that he proposes soon to collect his various articles on the seals and whales of the Pacific and republish them in book form, accompanied with illustrations and much additional matter,—a work which his long familiarity with them eminently qualifies him to prepare, and which will be heartily welcomed by naturalists, as well doubtless as by the general public. — J. A. A.

HOW PLANTS BEHAVE.* — Dr. Gray has just given us, under this title, a most charming continuation of his Botany for Young People, commenced in the well known volume, "How Plants Grow." Like that volume it gives a simple and well illustrated account of the phenomena of plant life, all the more to be enjoyed, because the author's scientific eminence guarantees its entire agreement with the last established facts and theories in Botany. The plan of the book is thus stated in the preface:

"There is a study of plants and flowers admirably adapted, while exciting a lively curiosity, to stimulate both observation and thought, to which I have long wished to introduce pupils of an early age. The time has now arrived in which I may make the attempt, and may ask young people to consider not only 'How

* Botany for Young People: Part II. How they move, climb, employ insects to work for them, etc. By Asa Gray. pp. 46. 12mo, with 40 illustrations. New York and Chicago. Ivison, Blakeman, Taylor, & Co. 1872.

Plants Grow,' but how plants Act, in certain important respects, easy to be observed,—everywhere open to observation, but (like other common things and common doings) very seldom seen or attended to. This little treatise, designed to open the way for the young student into this new, and, I trust, attractive field, may be regarded as a supplement to the now well-known book, the title of which is cited at the beginning of this prefatory note. If my expectations are fulfilled, it will add some very interesting chapters to the popular history of Plant-life.

“Although written with a view to elementary instruction, and therefore with all practical plainness, the subjects here presented are likely to be as novel, and perhaps as interesting, to older as to young readers.

“To those who may wish to pursue such studies further, and to those who notice how much is cut short or omitted (as, for instance, all reference to discoverers and sources of information), I may state that I expect to treat the subject in a different way, and probably with somewhat of scientific and historical fulness, in a new edition of a work intended for advanced students.”

The book contains three chapters of unequal length. Of these, the first describes the motions of plants and how they climb. The third chapter takes up the very curious fact that certain plants, for the most part in their leaves, possess living and very efficient insect-traps. The Pitcher-plant and Sundew are figured and described. In naming the volume “How Plants Behave,” Dr. Gray appears to recognize a personality in plants—at least he is careful, all the way through, to show that the actions which he explains are the result of the plant's will; and just as far as botanical science allows, he assigns the reasons for them. The following, from his account of the Venus' Flytrap of North Carolina shows the ambitious hunger which may make a plant carnivorous:

“It cannot be supposed that plants, like boys, catch flies for pastime or in objectless wantonness. Living beings though they are, they are not of a sufficiently high order for that. It is equally incredible that such an exquisite apparatus as this should be purposeless. And in the present case the evidence of the purpose and of the meaning of the strange action is wellnigh complete. The face of this living trap is thickly sprinkled with glands immersed in its texture, of elaborate structure under the microscope, but

large enough to be clearly discerned with a hand lens; these glands, soon after an insect is closed upon, give out a saliva-like liquid which moistens the insect, and in a short time (within a week or two) dissolves all its soft parts — digests them, we must believe; and the liquid, with the animal matter it has dissolved, is reabsorbed into the leaf! We are forced to conclude that, in addition to the ordinary faculties and function of a vegetable, this plant is really carnivorous.”

But by far the most interesting part of the book is the second and longest chapter, which takes up the Fertilization of Plants by Insects. There are especially two things for which we have to thank Dr. Gray, besides the general charm of his writing upon this theme. He has given us the simplest and most comprehensive statement of this great subject which we have seen, and it is no small advantage to have the enthusiasm of a thorough student of Botany turned to the work of instructing others. But in addition, he has taken his illustrations largely from common flowers, such as the *Houstonia*, *Kalmia*, *Arethusa*, *Iris*, etc., and has figured each with great beauty and accuracy. He has a word upon each of the many peculiarities in the arrangement of their stamens and pistils which plants present, and shows that instead of being limited to any one family, as to the Orchids, the agency of insects is very largely employed by all families of plants. It is impossible to quote from this chapter where all is so interesting, unless we give a word or two of Dr. Gray's summary, where the flowers of an estimable theologian's poetry are themselves fertilized in the interest of Science:

“The reciprocity of flower and flower, and of insects and flowers, is something admirable. Insects pay liberal wages for the food which flowers provide for them. The familiar rhymes of Dr. Watts directed the attention of young people to the bee visiting the flower as a model of industry. With a slight change of a couplet, adapting it to our present knowledge and to the lesson of mutual helpfulness, we may read:—

How doth the little busy bee
Improve each shining hour,
While gathering honey day by day,
To fertilize each flower.”

The paper, print, and illustrations of this little volume are especially good. The vignette title page is an excellent grouping of the various plants described within. — E. C. B.